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HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			BLACKMAN, ROCHELLE ANN J	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/762,086	Applicant(s) COLLINS ET AL.	
	Examiner Rochelle Blackman	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-21, 23, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Katoh et al. (U.S. Patent Application Publication No. 20030090597).

Regarding claim 1, Katoh discloses a display system (see FIGS. 1-76) for displaying an image, comprising: a modulator (for example, see 8 of FIG. 1 and/or 104 of FIG. 37) configured to produce a light beam that sequentially bears a plurality of color image sub-frames, wherein each color image sub-frame corresponds to one color in a plurality of colors; display optics (for example, see 11 of FIG. 1 and/or 110 of FIG. 37) configured to display said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and a wobbling device (for example, see 10 of FIG. 1 and/or 106 of FIG. 37) configured to displace said light beam between display of each of said color image sub-frames such that a color image sub-frame corresponding to each color in said plurality of colors is displayed in each of a number of image sub-frame locations.

Regarding claim 2, Katoh discloses an image processing unit (for example, see 100 of FIG. 37) configured to process image data defining said image and generate said image sub-frames; and a sequential color device (for example, see 20 of FIG. 9 and 128, 130, 134 of FIG. 37) configured to shine a color light beam on a face of said modulator, said color light beam having a color that sequentially rotates through said plurality of colors; wherein said modulator is configured to modulate said color light beam according to said number of color image sub-frames to produce said light beam bearing said plurality of color image sub-frames (see function of 8 of FIG. 1 and/or 104 of FIG. 37).

Regarding claim 3, Katoh discloses wherein said plurality of color image sub-frames comprises a number of color image sub-frames equal to said number of image sub-frame locations multiplied by a number of colors in said plurality of colors (for example, see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 4, Katoh discloses wherein said number of image sub-frame locations comprises: a first image sub-frame location; and a second image sub-frame location; wherein said second image sub-frame location is spatially offset by an offset distance from said first image sub-frame location (for example, also see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 5, Katoh discloses wherein said offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical

offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance (for example, also see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claims 6 and 17, Katoh discloses wherein said vertical offset distance and said horizontal offset distance are substantially equal to one-half of a pixel (see pixels in FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 7, Katoh discloses wherein said offset distance comprises a vertical offset distance, said second image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance (for example, also see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 8, Katoh discloses wherein said offset distance comprises a horizontal offset distance, said second image sub-frame location being horizontally offset from said first image sub-frame location by said horizontal offset distance (for example, also see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 9, Katoh discloses wherein said successive display of said plurality of color image sub-frames comprises alternately displaying said plurality of color image sub-frames in said first image sub-frame location and in said second image sub-frame location (for example, also see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claims 10 and 19, Katoh discloses wherein said plurality of colors comprises a first color, a second color, and a third color (see red, green, and blue in FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 11, Katoh discloses wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order: a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location; a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location; a first color image sub-frame corresponding to said third color is displayed in said first image sub-frame location; a second color image sub-frame corresponding to said first color is displayed in said second image sub-frame location; a second color image sub-frame corresponding to said second color is displayed in said first image sub-frame location; and a second color image sub-frame corresponding to said third color is displayed in said second image sub-frame location (for example, see function of 10 in FIG. 1 and/or 106 of FIG. 37 and see FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 12, Katoh discloses wherein said plurality of colors comprises a first color, a second color, a third color, and a fourth color (see red-R, green-G, blue-B, and yellow-Y or cyan-C in FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 13, Katoh discloses wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order: a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location; a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location; a first color image sub-frame corresponding to

said third color is displayed in said first image sub-frame location; a first color image sub-frame corresponding to said fourth color is displayed in said second image sub-frame location; a second color image sub-frame corresponding to said first color is displayed in said second image sub-frame location; a second color image sub-frame corresponding to said second color is displayed in said first image sub-frame location; a second color image sub-frame corresponding to said third color is displayed in said second image sub-frame location; and a second color image sub-frame corresponding to said fourth color is displayed in said first image sub-frame location (for example, see function of 10 in FIG. 1 and/or 106 of FIG. 37 and see FIGS. 4-8, 12, and 15-21).

Regarding claim 14, Katoh discloses wherein said number of image sub-frame locations comprises: a first image sub-frame location; a second image sub-frame location; a third image sub-frame location; and a fourth image sub-frame location (see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 15, Katoh discloses wherein: said second image sub-frame location is spatially offset by a first offset distance from said first image sub-frame location; said third image sub-frame location is spatially offset by a second offset distance from said second image sub-frame location; and said fourth image sub-frame location is spatially offset by a third offset distance from said third image sub-frame location (see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 16, Katoh discloses wherein: said first offset distance comprises a vertical offset distance and a horizontal offset distance, said second image sub-frame

location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said first image sub-frame location by said horizontal offset distance; said second offset distance comprises said vertical offset distance, said third image sub-frame location being vertically offset from said second image sub-frame location by said vertical offset distance; and said third offset distance comprises said vertical offset distance and said horizontal offset distance, said fourth image sub-frame location being vertically offset from said first image sub-frame location by said vertical offset distance and horizontally offset from said third image sub-frame location by said horizontal offset distance (see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 18, Katoh discloses wherein said successive display of said plurality of color image sub-frames comprises alternately displaying said plurality of color image sub-frames in said first, second, third, and fourth image sub-frame locations (see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 20, Katoh discloses wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order: a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location; a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location; a first color image sub-frame corresponding to said third color is displayed in said third image sub-frame location; a second color image sub-frame corresponding to said first color is displayed in said fourth image sub-frame location; a second color image sub-frame corresponding to said second color is

displayed in said first image sub-frame location; a second color image sub-frame corresponding to said third color is displayed in said second image sub-frame location; a third color image sub-frame corresponding to said first color is displayed in said third image sub-frame location; a third color image sub-frame corresponding to said second color is displayed in said fourth image sub-frame location; a third color image sub-frame corresponding to said third color is displayed in said first image sub-frame location; a fourth color image sub-frame corresponding to said first color is displayed in said second image sub-frame location; a fourth color image sub-frame corresponding to said second color is displayed in said third image sub-frame location; and a fourth color image sub-frame corresponding to said third color is displayed in said fourth image sub-frame location (for example, see function of 10 in FIG. 1 and/or 106 of FIG. 37 and see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 21, Katoh discloses wherein said wobbling device is further configured to displace said light beam between the display of each of said plurality of color image sub-frames in a manner wherein, in the following order: a first color image sub-frame corresponding to said first color is displayed in said first image sub-frame location; a first color image sub-frame corresponding to said second color is displayed in said second image sub-frame location; a first color image sub-frame corresponding to said third color is displayed in said first image sub-frame location; a second color image sub-frame corresponding to said first color is displayed in said second image sub-frame location; a second color image sub-frame corresponding to said second is displayed in said first image sub-frame location; a second color image sub-frame corresponding to

said third color is displayed in said second image sub-frame location; a third color image sub-frame corresponding to said first color is displayed in said third image sub-frame location; a third color image sub-frame corresponding to said second color is displayed in said fourth image sub-frame location; a third color image sub-frame corresponding to said third color is displayed in said third image sub-frame location; a fourth color image sub-frame corresponding to said first color is displayed in said fourth image sub-frame location; a fourth color image sub-frame corresponding to said second color is displayed in said third image sub-frame location; and a fourth color image sub-frame corresponding to said third color is displayed in said fourth image sub-frame location (for example, see function of 10 in FIG. 1 and/or 106 of FIG. 37 and see *frames* FIGS. 4-8, 12, 15, and 18-21).

Regarding claim 23, Katoh discloses wherein said modulator comprises a micromirror array (see 8 of FIG. 1 and/or 104 of FIG. 37 and paragraph [0458]).

Regarding claim 25, Katoh discloses wherein said sequential color device comprises a color wheel (see 20 of FIG. 9).

Regarding claims 26-36, the “display system for displaying an image” is similarly met by the above-mentioned elements of the “display system for displaying an image” of claims 1-21, 23, and 25.

Regarding claims 37-57, 59, and 61, the “method of displaying an image” is similarly met by the features and functions of the above-mentioned elements of the “display system for displaying an image” of claims 1-21, 23, and 25.

Regarding claims 62-72, the "the method of displaying an image" is similarly met by the features and functions of the above-mentioned elements of the "display system for displaying an image" of claims 1-21, 23, and 25.

Regarding claim 73, the "system for displaying an image" is similarly met by the above-mentioned elements of the "display system for displaying an image" of claims 1-21, 23, and 25.

Regarding claim 74, the "system for displaying an image" is similarly met by the above-mentioned elements of the "display system for displaying an image" of claims 1-21, 23, and 25.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh et al. (U.S. Patent Application Publication No. 20030090597) in view of Kurtz et al. (U.S. Patent No. 6,577,429).

Katoh discloses the claimed invention except for "wherein said modulator comprises a liquid crystal on silicon (LCOS) array; and wherein said wobbling device comprises a galvanometer mirror".

Kurtz teaches providing a modulator comprising a liquid crystal on silicon (LCOS) array (see *liquid-crystal-silicon (LCOS)* in col. 1, lines 40-46); and a wobbling device comprising a galvanometer mirror (see 210 of FIG. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a modulator comprising a liquid crystal on silicon (LCOS) array and a wobbling device comprising a galvanometer mirror in the Katoh reference, as taught by Kurtz for purpose of eliminating streak artifacts due to non-uniformities in the modulator array and providing speckle reduction (see col. 1, lines 45-50 and col. 3, line 50 to col. 4, line 1).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Art Unit: 2851

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-74 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-70 of copending Application No. 10/686,110. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Regarding claim 1, App. '110 discloses a display system (see *display system* of claims 1, 28, 34, and 37) for displaying an image, comprising: a modulator (see *modulator* of claim 1 and *spatial light modulator* of claims 28, 34, and 37) configured to produce a light beam that sequentially bears a plurality of color image sub-frames, wherein each color image sub-frame corresponds to one color in a plurality of colors; display optics (see *display optics* of claim 1) configured to display said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and a wobbling device (see *wobbling device* of claims 1, 28, 34, and 37) configured to displace said light beam between display of each of said color image sub-frames such that a color image sub-frame corresponding to each color in said plurality of colors is displayed in each of a number of image sub-frame locations. Dependent claims 2-25 are similarly met by the above-mentioned elements of claim 1 of App. '110, as well as elements of claims 2-27, 29-33, 35, 36, 38, and 39 of App. '110.

Regarding claim 26, app. '110 discloses a display system (see *display system* of claims 1, 28, 34, and 37) for displaying an image, comprising: a modulator (see *modulator* of claim 1 and *spatial light modulator* of claims 28, 34, and 37) configured to

produce a light beam that sequentially bears a plurality of color image sub-frames, said plurality of color image sub-frames divided into a number of groups of first, second, and third color image sub-frames of different colors; display optics (see *display optics* of claim 1) configured to display said light beam such that said plurality of color image sub-frames are successively displayed to form said image; and a wobbling device (see *wobbling device* of claims 1, 28, 34, and 37) configured to displace said light beam such that said first and second image sub-frames in each of said number of groups are displayed in one of a number of image sub-frame locations and said third image sub-frame in each of said number of groups is displayed in another of said number of image sub-frame locations. Dependent claims 27-35 are similarly met by the above-mentioned elements of claim 1 of App. '110, as well as elements of claims 2-27, 29-33, 35, 36, 38, and 39 of App. '110.

Regarding claim 37, app.'110 discloses a method of displaying an image (see *method of displaying an image* of claim 40), said method comprising: producing a light beam that sequentially bears a plurality of color image sub-frames with a modulator, wherein each color image sub-frame uniquely corresponds to one color in a plurality of colors (see *generating a light beam...* of claim 40); displaying said light beam such that said plurality of color image sub-frames are successively displayed to form said image (see *displaying said color light beam...* of claim 40); and displacing said light beam between display of each of said color image sub-frames such that a color image sub-frame corresponding to each color in said plurality of colors is displayed in each of a number of image sub-frame locations (see *displacing said color light beam...* of claim

40). Dependent claims 38-57 are similarly met by the above-mentioned features and functions of claim 40 of app. '110, as well as features and functions of claims 41-61 of App. '110).

Regarding claim 62, App. '110 discloses a method of displaying an image (see *method of displaying an image* of claim 40), comprising: producing a light beam that sequentially bears a plurality of color image sub-frames, said plurality of color image sub-frames divided into a number of groups of first, second, and third color image sub-frames of different colors (see *generating a light beam...* of claim 40); displaying said light beam such that said plurality of color image sub-frames are successively displayed to form said image (see *displaying said color light beam...* of claim 40); and displacing said light beam such that said first and second image sub-frames in each of said number of groups are displayed in one of a number of image sub-frame locations and said third image sub-frame in each of said number of groups is displayed in another of said number of image sub-frame locations (see *displacing said color light beam...* of claim 40). Dependent claims 63-71 are similarly met by the above-mentioned features and functions of claim 40 of App. '110, as well as features and functions of claims 41-61 of App. '110).

Regarding claim 73, App. '110 discloses a system for displaying an image (see *system for displaying an image* of claim 68), said system comprising: means for producing a light beam that sequentially bears a plurality of color image sub-frames, wherein each color image sub-frame corresponds to one color in a plurality of colors (see *modulation means for generating a light beam...* of claim 68); means for displaying

said light beam such that said plurality of color image sub-frames are successively displayed to form said image (see *display means...* of col. 68); and means for displacing said light beam between display of each of said plurality of color image sub-frames such that a color image sub-frame corresponding to each color in said plurality of colors is displayed in each of a number of image sub-frame locations (see *displacement means...* of claim 68).

Regarding claim 74, App. '110 discloses a system for displaying an image (see *system for displaying an image* of claim 68), comprising: means for producing a light beam that sequentially bears a plurality of color image sub-frames, said plurality of color image sub-frames divided into a number of groups of first, second, and third color image sub-frames of different colors (see *modulation means for generating a light beam...* of claim 68); means for displaying said light beam such that said plurality of color image sub-frames are successively displayed to form said image (see *display means...* of col. 68); and means for displacing said light beam such that said first and second image sub-frames in each of said number of groups are displayed in one of a number of image sub-frame locations and said third image sub-frame in each of said number of groups is displayed in another of said number of image sub-frame locations (see *displacement means...* of claim 68).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rochelle Blackman whose telephone number is (571) 272-2113. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



RB

William Perkey
Primary Examiner